



BioMap and Living Waters

Guiding Land Conservation for Biodiversity in Massachusetts

Core Habitats of Bourne

This report and associated map provide information about important sites for biodiversity conservation in your area.

This information is intended for conservation planning, and is not intended for use in state regulations.

Produced by:
Natural Heritage & Endangered Species Program
Massachusetts Division of Fisheries and Wildlife
Executive Office of Environmental Affairs
Commonwealth of Massachusetts

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* Depending on the location of Core Habitats, your city or town may not have all of these sections.

Spring Salamander
(*Gyrinophilus porphyriticus*)
Species of Special Concern



Funding for this project was made available by the Executive Office of Environmental Affairs, contributions to the Natural Heritage & Endangered Species Fund, and through the State Wildlife Grants Program of the US Fish & Wildlife Service.



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Introduction

In this report, the Natural Heritage & Endangered Species Program provides you with site-specific biodiversity information for your area. Protecting our biodiversity today will help ensure the full variety of species and natural communities that comprise our native flora and fauna will persist for generations to come.

The information in this report is the result of two statewide biodiversity conservation planning projects, **BioMap** and **Living Waters**. The goal of the BioMap project, completed in 2001, was to identify and delineate the most important areas for the long-term viability of terrestrial, wetland, and estuarine elements of biodiversity in Massachusetts. The goal of the Living Waters project, completed in 2003, was to identify and delineate the rivers, streams, lakes, and ponds that are important for freshwater biodiversity in the Commonwealth. These two conservation plans are based on documented observations of rare species, natural communities, and exemplary habitats.

What is a Core Habitat?

Both BioMap and Living Waters delineate **Core Habitats** that identify the most critical sites for biodiversity conservation across the state. Core Habitats represent habitat for the state's most viable rare plant and animal populations and include exemplary natural communities and aquatic habitats. Core Habitats represent a wide diversity of rare species and natural communities (see Table 1), and these areas are also thought to contain virtually all of the other described species in Massachusetts. Statewide, BioMap Core Habitats encompass 1,380,000 acres of uplands and wetlands, and Living Waters identifies 429 Core Habitats in rivers, streams, lakes, and ponds.



Core Habitats and Land Conservation

One of the most effective ways to protect biodiversity for future generations is to protect Core Habitats from adverse human impacts through land conservation. For Living Waters Core Habitats, protection efforts should focus on the **riparian areas**, the areas of land adjacent to water bodies. A naturally vegetated buffer that extends 330 feet (100 meters) from the water's edge helps to maintain cooler water temperature and to maintain the nutrients, energy, and natural flow of water needed by freshwater species.

In Support of Core Habitats

To further ensure the protection of Core Habitats and Massachusetts' biodiversity in the long-term, the BioMap and Living Waters projects identify two additional areas that help support Core Habitats.

In BioMap, areas shown as **Supporting Natural Landscape** provide buffers around the Core Habitats, connectivity between Core Habitats, sufficient space for ecosystems to function, and contiguous undeveloped habitat for common species. Supporting Natural Landscape was



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generated using a Geographic Information Systems (GIS) model, and its exact boundaries are less important than the general areas that it identifies. Supporting Natural Landscape represents potential land protection priorities once Core Habitat protection has been addressed.

In Living Waters, *Critical Supporting Watersheds* highlight the immediate portion of the watershed that sustains, or possibly degrades, each freshwater Core Habitat. These areas were also identified using a GIS model. Critical Supporting Watersheds represent developed and undeveloped lands, and can be quite large. Critical Supporting Watersheds can be helpful in land-use planning, and while they are not shown on these maps, they can be viewed in the Living Waters report or downloaded from www.mass.gov/mgis.

Understanding Core Habitat Species, Community, and Habitat Lists

What's in the List?

Included in this report is a list of the species, natural communities, and/or aquatic habitats for each Core Habitat in your city or town. The lists are organized by Core Habitat number.

For the larger Core Habitats that span more than one town, the species and community lists refer to the entire Core Habitat, not just the portion that falls within your city or town. For a list of all the state-listed rare species within your city or town's boundary, whether or not they are in Core Habitat, please see the town rare species lists available at www.nhesp.org.

The list of species and communities within a Core Habitat contains only the species and

Table 1. The number of rare species and types of natural communities explicitly included in the BioMap and Living Waters conservation plans, relative to the total number of native species statewide.

BioMap		
Biodiversity Group	Species and Verified Natural Community Types	
	Included in BioMap	Total Statewide
Vascular Plants	246	1,538
Birds	21	221 breeding species
Reptiles	11	25
Amphibians	6	21
Mammals	4	85
Moths and Butterflies	52	An estimated 2,500 to 3,000
Damselflies and Dragonflies	25	An estimated 165
Beetles	10	An estimated 2,500 to 4,000
Natural Communities	92	> 105 community types
Living Waters		
Biodiversity Group	Species	
	Included in Living Waters	Total Statewide
Aquatic Vascular Plants	23	114
Fishes	11	57
Mussels	7	12
Aquatic Invertebrates	23	An estimated > 2500

natural communities that were explicitly included in a given BioMap or Living Waters Core Habitat. Other rare species or examples of other natural communities may fall within the Core Habitat, but for various reasons are not included in the list. For instance, there are a few rare species that are omitted from the list or summary because of their particular sensitivity to the threat of collection. Likewise, the content of many very small Core Habitats are not described in this report or list, often because they contain a single location of a rare plant



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species. Some Core Habitats were created for suites of common species, such as forest birds, which are particularly threatened by habitat fragmentation. In these cases, the individual common species are not listed.

What does 'Status' mean?

The Division of Fisheries and Wildlife determines a status category for each rare species listed under the Massachusetts Endangered Species Act, M.G.L. c.131A, and its implementing regulations, 321 CMR 10.00. Rare species are categorized as Endangered, Threatened, or of Special Concern according to the following:

- **Endangered** species are in danger of extinction throughout all or a significant portion of their range or are in danger of extirpation from Massachusetts.
- **Threatened** species are likely to become Endangered in Massachusetts in the foreseeable future throughout all or a significant portion of their range.
- **Special Concern** species have suffered a decline that could threaten the species if allowed to continue unchecked or occur in such small numbers or with such restricted distribution or specialized habitat requirements that they could easily become Threatened in Massachusetts.

In addition, the Natural Heritage & Endangered Species Program maintains an unofficial **watch list** of plants that are tracked due to potential conservation interest or concern, but are not regulated under the Massachusetts Endangered Species Act or other laws or regulations. Likewise, described natural communities are not regulated any laws or regulations, but they can help to identify ecologically important areas that are worthy of protection. The status of natural

Legal Protection of Biodiversity

BioMap and Living Waters present a powerful vision of what Massachusetts would look like with full protection of the land that supports most of our biodiversity. To create this vision, some populations of state-listed rare species were deemed more likely to survive over the long-term than others.

Regardless of their potential viability, all sites of state-listed species have full legal protection under the Massachusetts Endangered Species Act (M.G.L. c.131A) and its implementing regulations (321 CMR 10.00). Habitat of state-listed wildlife is also protected under the Wetlands Protection Act Regulations (310 CMR 10.37 and 10.59). The **Massachusetts Natural Heritage Atlas** shows **Priority Habitats**, which are used for regulation under the Massachusetts Endangered Species Act and Massachusetts Environmental Policy Act (M.G.L. c.30) and **Estimated Habitats**, which are used for regulation of rare wildlife habitat under the Wetlands Protection Act. For more information on rare species regulations, see the *Massachusetts Natural Heritage Atlas*, available from the Natural Heritage & Endangered Species Program in book and CD formats.

BioMap and Living Waters are conservation planning tools and do not, in any way, supplant the Estimated and Priority Habitat Maps which have regulatory significance. Unless and until the combined BioMap and Living Waters vision is fully realized, we must continue to protect all populations of our state-listed species and their habitats through environmental regulation.

communities reflects the documented number and acreages of each community type in the state:

- **Critically Imperiled** communities typically have 5 or fewer documented sites or have very few remaining acres in the state.
- **Imperiled** communities typically have 6-20 sites or few remaining acres in the state.
- **Vulnerable** communities typically have 21-100 sites or limited acreage across the state.
- **Secure** communities typically have over 100 sites or abundant acreage across the state; however excellent examples are identified as Core Habitat to ensure continued protection.



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Understanding Core Habitat Summaries

Following the BioMap and Living Waters Core Habitat species and community lists, there is a descriptive summary of each Core Habitat that occurs in your city or town. This summary highlights some of the outstanding characteristics of each Core Habitat, and will help you learn more about your city or town's biodiversity. You can find out more information about many of these species and natural communities by looking at specific *fact sheets* at www.nhesp.org.

Next Steps

BioMap and Living Waters were created in part to help cities and towns prioritize their land protection efforts. While there are many reasons to conserve land – drinking water protection, recreation, agriculture, aesthetics, and others – BioMap and Living Waters Core Habitats are especially helpful to municipalities seeking to protect the rare species, natural communities, and overall biodiversity within their boundaries. Please use this report and map along with the rare species and community fact sheets to appreciate and understand the biological treasures in your city or town.

Protecting Larger Core Habitats

Core Habitats vary considerably in size. For example, the average BioMap Core Habitat is 800 acres, but Core Habitats can range from less than 10 acres to greater than 100,000 acres. These larger areas reflect the amount of land needed by some animal species for breeding, feeding, nesting, overwintering, and long-term survival. Protecting areas of this size can be

very challenging, and requires developing partnerships with neighboring towns.

Prioritizing the protection of certain areas within larger Core Habitats can be accomplished through further consultation with Natural Heritage Program biologists, and through additional field research to identify the most important areas of the Core Habitat.

Additional Information

If you have any questions about this report, or if you need help protecting land for biodiversity in your community, the Natural Heritage & Endangered Species Program staff looks forward to working with you.

Contact the Natural Heritage & Endangered Species Program:

by Phone 508-792-7270, Ext. 200

by Fax: 508-792-7821

by Email: natural.heritage@state.ma.us.

by Mail: North Drive
Westborough, MA 01581

The GIS datalayers of BioMap and Living Waters Core Habitats are available for download from MassGIS: www.mass.gov/mgis

Check out www.nhesp.org for information on:

- Rare species in your town
- Rare species fact sheets
- BioMap and Living Waters projects
- Natural Heritage publications, including:
 - * Field guides
 - * Natural Heritage Atlas, and more!



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BioMap: Species and Natural Communities

Bourne

Core Habitat BM1190

Natural Communities

<u>Common Name</u>	<u>Scientific Name</u>	<u>Status</u>
Coastal Plain Pondshore		Imperiled
Pitch Pine - Scrub Oak Community		Imperiled
Red Maple Swamp		Secure
Sandplain Heathland		Critically Imperiled
Scrub Oak Shrubland		Critically Imperiled

Plants

<u>Common Name</u>	<u>Scientific Name</u>	<u>Status</u>
Broom Crowberry	<i>Corema conradii</i>	Special Concern
Inundated Horned-Sedge	<i>Rhynchospora inundata</i>	Threatened
Long-Beaked Bald-Sedge	<i>Rhynchospora scirpoides</i>	Special Concern
New England Blazing Star	<i>Liatris scariosa</i> var. <i>novae-angliae</i>	Special Concern
New England Boneset	<i>Eupatorium leucolepis</i> var. <i>novae-angliae</i>	Endangered
Plymouth Gentian	<i>Sabatia kennedyana</i>	Special Concern
Pondshore Knotweed	<i>Polygonum puritanorum</i>	Special Concern
Pondshore-dodder	<i>Cuscuta coryli</i>	Watch Listed
Redroot	<i>Lachnanthes caroliana</i>	Special Concern
Reticulate Nut-Sedge	<i>Scleria reticularis</i>	Watch Listed
Short-Beaked Bald-Sedge	<i>Rhynchospora nitens</i>	Threatened
Swamp Oats	<i>Sphenopholis pensylvanica</i>	Threatened
Terete Arrowhead	<i>Sagittaria teres</i>	Special Concern
Torrey's Beak-Sedge	<i>Rhynchospora torreyana</i>	Endangered
Walter's Sedge	<i>Carex striata</i>	Endangered
Wright's Panic-grass	<i>Dichanthelium wrightianum</i>	Special Concern



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BioMap: Species and Natural Communities

Bourne

Invertebrates

<u>Common Name</u>	<u>Scientific Name</u>	<u>Status</u>
Attenuated Bluet	<i>Enallagma daeckii</i>	Special Concern
Barrens Buckmoth	<i>Hemileuca maia</i>	Special Concern
Barrens Daggermoth	<i>Acronicta albarufa</i>	Threatened
Blueberry Sallow	<i>Apharetra dentata</i>	-----
Buchholz's Gray	<i>Hypomecis buchholzaria</i>	Endangered
Chain Dot Geometer	<i>Cingilia catenaria</i>	Special Concern
Coastal Heathland Cutworm	<i>Abagrotis nefascia benjamini</i>	Special Concern
Coastal Plain Apamea Moth	<i>Apamea mixta</i>	Special Concern
Coastal Swamp Metarranthis Moth	<i>Metarranthis pilosaria</i>	Special Concern
Comet Darner	<i>Anax longipes</i>	Special Concern
Drunk Apamea Moth	<i>Apamea inebriata</i>	Special Concern
Frosted Elfin	<i>Callophrys irus</i>	Special Concern
Gerhard's Underwing Moth	<i>Catocala herodias gerhardi</i>	Special Concern
Hessel's Hairstreak	<i>Callophrys hesseli</i>	Special Concern
Melsheimer's Sack Bearer	<i>Cicinnus melsheimeri</i>	Threatened
New England Bluet	<i>Enallagma laterale</i>	Special Concern
Pale Green Pinion Moth	<i>Lithophane viridipallens</i>	Special Concern
Pine Barrens Bluet	<i>Enallagma recurvatum</i>	Threatened
Pine Barrens Itame	<i>Itame sp. 1 near inextricata</i>	Special Concern
Pine Barrens Zale	<i>Zale sp. 1 near lunifera</i>	Special Concern
Pine Barrens Zanclognatha	<i>Zanclognatha martha</i>	Threatened
Pink Sallow	<i>Psectraglaea carnosae</i>	Special Concern
Pitcher Plant Borer Moth	<i>Papaipema appassionata</i>	Threatened
Purple Tiger Beetle	<i>Cicindela purpurea</i>	Special Concern
Sensitive Rare Invertebrate		
Slender Clearwing Sphinx Moth	<i>Hemaris gracilis</i>	Special Concern



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BioMap: Species and Natural Communities

Bourne

Spartina Borer Moth	<i>Spartiniphaga inops</i>	Special Concern
Spiny Oakworm	<i>Anisota stigma</i>	Special Concern
Unexpected Cynia	<i>Cynia inopinatus</i>	Threatened
Water-Willow Stem Borer	<i>Papaipema sulphurata</i>	Threatened
Waxed Sallow Moth	<i>Chaetagnaea cerata</i>	Special Concern

Vertebrates

<u>Common Name</u>	<u>Scientific Name</u>	<u>Status</u>
Eastern Box Turtle	<i>Terrapene carolina</i>	Special Concern
Grasshopper Sparrow	<i>Ammodramus savannarum</i>	Threatened
Grassland Bird Habitat		-----
Northern Red-bellied Cooter	<i>Pseudemys rubriventris</i>	Endangered
Pine Barrens Bird Habitat		-----
Spotted Turtle	<i>Clemmys guttata</i>	Special Concern

Core Habitat BM1237

Plants

<u>Common Name</u>	<u>Scientific Name</u>	<u>Status</u>
Bushy Rockrose	<i>Helianthemum dumosum</i>	Special Concern

Invertebrates

<u>Common Name</u>	<u>Scientific Name</u>	<u>Status</u>
Dune Noctuid Moth	<i>Oncocnemis riparia</i>	Special Concern
Gerhard's Underwing Moth	<i>Catocala herodias gerhardi</i>	Special Concern

Vertebrates

<u>Common Name</u>	<u>Scientific Name</u>	<u>Status</u>
Four-toed Salamander	<i>Hemidactylium scutatum</i>	Special Concern
Songbird Migration Habitat		-----
Wading Bird Habitat		-----



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BioMap: Species and Natural Communities

Bourne

Core Habitat BM1250

Natural Communities

<u>Common Name</u>	<u>Scientific Name</u>	<u>Status</u>
Coastal Atlantic White Cedar Swamp		Imperiled
Coastal Plain Pondshore		Imperiled
Kettlehole Level Bog		Imperiled
Pitch Pine - Scrub Oak Community		Imperiled

Plants

<u>Common Name</u>	<u>Scientific Name</u>	<u>Status</u>
Adder's-Tongue Fern	<i>Ophioglossum pusillum</i>	Threatened
Broad Tinker's-Weed	<i>Triosteum perfoliatum</i>	Endangered
Creeping St. John's-Wort	<i>Hypericum adpressum</i>	Threatened
Long-Beaked Bald-Sedge	<i>Rhynchospora scirpoides</i>	Special Concern
Maryland Meadow Beauty	<i>Rhexia mariana</i>	Endangered
Ovate Spike-Sedge	<i>Eleocharis ovata</i>	Endangered
Pondshore Knotweed	<i>Polygonum puritanorum</i>	Special Concern
Purple Milkweed	<i>Asclepias purpurascens</i>	Endangered
Redroot	<i>Lachnanthes carolina</i>	Special Concern
Reticulate Nut-Sedge	<i>Scleria reticularis</i>	Watch Listed
Sandplain Flax	<i>Linum intercursum</i>	Special Concern
Short-Beaked Bald-Sedge	<i>Rhynchospora nitens</i>	Threatened
Terete Arrowhead	<i>Sagittaria teres</i>	Special Concern
Torrey's Beak-Sedge	<i>Rhynchospora torreyana</i>	Endangered
Weak Rush	<i>Juncus debilis</i>	Endangered
Wright's Panic-grass	<i>Dichanthelium wrightianum</i>	Special Concern

Invertebrates

<u>Common Name</u>	<u>Scientific Name</u>	<u>Status</u>
Barrens Buckmoth	<i>Hemileuca maia</i>	Special Concern



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BioMap: Species and Natural Communities

Bourne

Barrens Daggermoth	<i>Acronicta albarufa</i>	Threatened
Blueberry Sallow	<i>Apharetra dentata</i>	-----
Chain Dot Geometer	<i>Cingilia catenaria</i>	Special Concern
Coastal Heathland Cutworm	<i>Abagrotis nefascia benjamini</i>	Special Concern
Coastal Swamp Metarranthis Moth	<i>Metarranthis pilosaria</i>	Special Concern
Comet Darner	<i>Anax longipes</i>	Special Concern
Dune Noctuid Moth	<i>Oncocnemis riparia</i>	Special Concern
Frosted Elfin	<i>Callophrys irus</i>	Special Concern
Gerhard's Underwing Moth	<i>Catocala herodias gerhardi</i>	Special Concern
Melsheimer's Sack Bearer	<i>Cicinnus melsheimeri</i>	Threatened
New England Bluet	<i>Enallagma laterale</i>	Special Concern
Oak Hairstreak	<i>Satyrrium favonius</i>	Special Concern
Pine Barrens Bluet	<i>Enallagma recurvatum</i>	Threatened
Pine Barrens Itame	<i>Itame sp. 1 near inextricata</i>	Special Concern
Pine Barrens Zale	<i>Zale sp. 1 near lunifera</i>	Special Concern
Spatterdock Darner	<i>Aeshna mutata</i>	Special Concern
Spiny Oakworm	<i>Anisota stigma</i>	Special Concern
Straight-lined Mallow moth	<i>Bagisara rectifascia</i>	Special Concern
The Pink Streak	<i>Faronta rubripennis</i>	Threatened
Tule Bluet	<i>Enallagma carunculatum</i>	Special Concern
Unexpected Cynia	<i>Cynia inopinatus</i>	Threatened
Water-Willow Stem Borer	<i>Papaipema sulphurata</i>	Threatened
Waxed Sallow Moth	<i>Chaetagnaea cerata</i>	Special Concern

Vertebrates

<u>Common Name</u>	<u>Scientific Name</u>	<u>Status</u>
Eastern Box Turtle	<i>Terrapene carolina</i>	Special Concern
Grasshopper Sparrow	<i>Ammodramus savannarum</i>	Threatened
Northern Harrier	<i>Circus cyaneus</i>	Threatened



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BioMap: Species and Natural Communities

Bourne

Upland Sandpiper

Bartramia longicauda

Endangered

Core Habitat BM1294

Vertebrates

Common Name

Scientific Name

Status

Piping Plover

Charadrius melodus

Threatened

Core Habitat BM1314

Invertebrates

Common Name

Scientific Name

Status

Water-Willow Stem Borer

Papaipema sulphurata

Threatened

Core Habitat BM1315

Plants

Common Name

Scientific Name

Status

Small Site for Rare Plant

Core Habitat BM1331

Plants

Common Name

Scientific Name

Status

Small Site for Rare Plant

Core Habitat BM1353

Plants

Common Name

Scientific Name

Status

Small Site for Rare Plant

Core Habitat BM1364

Plants

Common Name

Scientific Name

Status

Small Site for Rare Plant



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BioMap: Species and Natural Communities

Bourne

Core Habitat BM1371

Plants

Common Name

Scientific Name

Status

Small Site for Rare Plant



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Bourne

Core Habitat BM1190

This Core Habitat, centered on Myles Standish State Forest, contains the largest contiguous area of the globally significant Pitch Pine-Scrub Oak natural community remaining in the Northeast. This and other natural communities within the Core Habitat support a diversity of rare plants and animals, including no fewer than 33 rare invertebrate species of moths, butterflies, dragonflies, damselflies, and tiger beetles, as well as several globally rare plants adapted to Coastal Plain pondshores. The Core Habitat supports rare birds, salamanders, and turtles, including state's largest known population of the Northern Red-bellied Cooter turtle. The size and quality of this Core Habitat make it the best hope for the long-term survival of rare pine barrens species in New England. Although anchored by the large Myles Standish State Forest, the majority of this Core Habitat remains unprotected.

Natural Communities

This large Core Habitat contains the globally significant Pitch Pine-Scrub Oak community centered in Myles Standish State Forest. At almost 17,000 acres, this is the largest of its kind remaining in the Northeast. Pitch Pine-Scrub Oak communities are globally rare, fire dependant, shrub-dominated communities with scattered to dense trees. They provide habitat for many rare species, and develop on dry, poor soils, usually made up primarily of sand. This Core Habitat includes many other, smaller, rare community types within the predominant Pitch Pine-Scrub Oak community, including 15 acres of Scrub Oak Shrublands and 50 acres of Sandplain Heathlands in various-sized frost pockets and openings. This entire complex of natural communities is fire dependent and supports many fire-adapted species. Also, over two dozen Coastal Plain Pondshore communities of various sizes and quality are scattered throughout the Core Habitat. All of these natural communities are associated with state-listed plant and animal species.

Plants

This Core Habitat is rich in rare plant species adapted to the shorelines of Coastal Plain ponds. Two of the most viable populations in the state of the globally rare New England Boneset are found along pondshores in this Core Habitat, as are five outstanding populations of Terete Arrowhead (Species of Special Concern). Several rare and interesting members of the sedge family are found here, including four species of rare beak-sedges, one Endangered sedge species, and an uncommon nut-rush. The beautiful Plymouth Gentian, while abundant in this Core Habitat area, is a rare species globally.



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BioMap: Core Habitat Summaries

Bourne

Invertebrates

This area is Core Habitat for no fewer than 33 invertebrate species that are listed as Endangered, Threatened, or Species of Special Concern in Massachusetts, including 27 species of moths and butterflies, four species of dragonflies and damselflies, and two species of tiger beetles. Three of these species are found nowhere else in Massachusetts, and many of them have their largest and most viable populations within this Core Habitat. Besides barrens species such as the Persius Duskywing butterfly, Melsheimer's Sack Bearer moth, and the Barrens Daggermoth, this Core Habitat includes many other habitats for rare invertebrates, including heathlands inhabited by species such as the Slender Clearwing Sphinx moth and the Pink Sallow moth; acidic shrub swamps and bogs that are habitat for the Pale Green Pinion moth, the Coastal Swamp Metarranthus moth, and the Water-willow Stem Borer moth; and Coastal Plain ponds inhabited by the Comet Darner dragonfly and the Pine Barrens Bluet damselfly.

Vertebrates

This Core Habitat encompasses Myles Standish State Forest and over nine square miles of uplands, wetlands, ponds, and cranberry bogs. The area contains habitat for the largest known population of the Northern Red-bellied Cooter turtle (formerly known as the Plymouth Red-bellied Turtle) in the state. Given the large size of the Core Habitat, it also may be one of the most important areas for the Eastern Box Turtle in the state, and it contains habitat for Spotted Turtles, and likely Four-toed and Blue-spotted Salamanders. It also contains some of the largest areas of pitch pine - scrub oak bird habitat remaining in New England. The managed grasslands at Plymouth Municipal Airport provide habitat for Grasshopper Sparrows and other grassland birds. Annual or bi-annual mowing is needed to maintain grassland habitat at the airport, with minimal mowing between May 1 and July 31 to reduce the mortality of eggs and chicks.

Core Habitat BM1237

This Core Habitat encompasses salt marsh, freshwater wetlands, and adjacent uplands landward of Scusset and Sagamore beaches. The area supports a population of the globally rare Bushy Rockrose and provides habitat for Four-toed Salamanders, a variety of birds, and two rare species of moths.

Plants

The globally rare Bushy Rockrose (Species of Special Concern) is growing here in an open community resembling a sandplain grassland.

Invertebrates

This Core Habitat includes an unfragmented complex of coastal habitats, including scrub oak thickets inhabited by Gerhard's Underwing moth and sand dunes that are habitat for the rare Dune Noctuid moth. This Core Habitat is located in close proximity to similar habitats at the Massachusetts Military Reservation, which allows for dispersal of rare moths and other flying invertebrates between these two locations.



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BioMap: Core Habitat Summaries

Bourne

Vertebrates

This Core Habitat contains freshwater wetland habitat for Four-toed Salamanders, salt marshes for wading birds, and coastal forest and shrubland habitat for migrant songbirds. Land protection of the remaining unprotected areas should aim to protect the largest possible contiguous block of salt marsh, wetlands, and adjacent uplands.

Core Habitat BM1250

This large Core Habitat encompasses two globally important types of natural communities, the Pitch Pine-Scrub Oak community and the Coastal Plain Pond community. These and other habitats support two dozen rare species of moths, butterflies, dragonflies, and damselflies, including some of the largest and most viable populations in the state for several of these insect species. The Core Habitat also contains a diversity of rare plant species, many of which are associated with Coastal Plain Pondshores. Further protecting this Core Habitat's large Pine-Oak woodlands and barrens may provide the best opportunity in the state to conserve viable populations of Eastern Box Turtles. This is also one of the most important areas in New England for the conservation of landbirds characteristic of these habitats. Except for a portion within the Crane Wildlife Management Area in Falmouth, much of this important Core Habitat is not explicitly protected for biodiversity conservation.

Natural Communities

This large Core Habitat encompasses several areas of the Pitch Pine-Scrub Oak natural community type, including an unusual example in Mashpee with small Atlantic White Cedar Bogs included. The largest area of Pitch Pine-Scrub Oak community is in the Camp Edwards area and forms an important habitat connection with the Pitch Pine-Scrub Oak community to the north in Plymouth. Pitch Pine-Scrub Oak communities are globally rare, fire dependant shrub-dominated communities, with scattered to dense trees. They provide habitat for many rare species, and develop on dry, poor soils, usually made up primarily of sand. This Core Habitat also contains a pristine and well-buffered Coastal Plain Pondshore community with intact pondshore vegetation unaffected by disturbances, cranberry operations, or public water supply wells. Coastal Plain Pondshores are globally rare herbaceous communities of exposed pondshores with a distinct Coastal Plain flora. Water levels change with the water table, typically leaving an exposed shoreline in late summer where many rare species grow.

Plants

More than a dozen species of rare plants is found growing in various habitats within this large Core Habitat. Among them is the inconspicuous Adder's-Tongue Fern, usually found in wet meadows. Also present are the Long-Beaked Bald-Sedge and Torrey's Beak-Sedge, two members of the sedge family found along Coastal Plain pondshores. In fact, many of the rare plant species found within this area are associated with Coastal Plain pondshore natural communities.



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BioMap: Core Habitat Summaries

Bourne

Invertebrates

This Core Habitat supports no fewer than 24 invertebrate species that are listed as Endangered, Threatened, or Species of Special Concern in Massachusetts, including 19 species of moths and butterflies and five species of dragonflies and damselflies. One of these species is found nowhere else in Massachusetts. For many others, one of their largest and most viable populations is found within this Core Habitat. Besides barrens species such as the Frosted Elfin butterfly, the Melsheimer's Sack Bearer moth, and the Barrens Daggermoth, this Core Habitat includes many other habitats for rare invertebrates, including heathlands inhabited by species such as the Chain Dot Geometer moth and the Waxed Sallow moth; acidic shrub swamps and kettlehole bogs that are habitat for the Coastal Swamp Metarranthus moth and the Water-willow Stem Borer moth; sandplain grasslands that provide habitat for the Pink Streak moth and the Unexpected Cynia moth; and Coastal Plain ponds inhabited by the Comet Darner dragonfly and the Pine Barrens Bluet damselfly.

Vertebrates

Collectively, the large and relatively unfragmented tracts of pine-oak woodlands and barrens contained within this Core Habitat may be the single most important area for the long-term conservation of viable populations of Eastern Box Turtles in Massachusetts. This is also one of the most important areas in New England for the conservation of landbirds characteristic of these habitats. Significant breeding populations of Whip-poor-wills are still present. This was one of the most important breeding sites for Upland Sandpipers and Grasshopper Sparrows in southern New England, but grassland habitat has declined substantially during the past 20 years due to vegetative succession resulting from lack of mowing or burning. Both of these species of grassland birds would benefit from management to increase the acreage of contiguous grassland on the cantonment area of the Massachusetts Military Reservation and to minimize mowing on the Otis Air National Guard airfield during the May 1 to July 31 nesting season. Northern Harriers use the extensive shrublands and remaining grasslands for nesting and foraging. Protection of the remaining undeveloped portions of this area would preserve a minimally fragmented 12 mile-long tract of oak-pine woodland and barrens habitats extending from the northern edge of Falmouth's urban areas north to the Cape Cod Canal.

Core Habitat BM1294

Vertebrates

Mashnee Dike supports breeding Piping Plovers. Potential threats to nesting coastal waterbirds include habitat alteration and loss, human disturbance, and predation. Annual protection from these threats is needed.



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BioMap: Core Habitat Summaries

Bourne

Core Habitat BM1314

Invertebrates

The shoreline of Upper Pond, Freeman Pond, Shop Pond, and other shallow wetlands with Water-willow within this Core Habitat are habitat for the Water-willow Stem Borer moth, a Threatened species that is found nowhere in the world outside of Massachusetts. This Core Habitat is located less than 10 km from other habitats for the Water-willow Stem Borer within Core Habitat in Bourne, Sandwich, and Falmouth. This proximity allows for occasional movement of individual moths between these areas, which is important to maintain a viable population of this species. Apparently most of this Core Habitat is on the protected land of the Four Ponds Conservation area.



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Living Waters: Species and Habitats

Bourne

Core Habitat LW339

Exemplary Habitats

<u>Common Name</u>	<u>Scientific Name</u>	<u>Status</u>
Fish Habitat		-----

Invertebrates

<u>Common Name</u>	<u>Scientific Name</u>	<u>Status</u>
Eastern Pondmussel	<i>Ligumia nasuta</i>	Special Concern
Tidewater Mucket	<i>Leptodea ochracea</i>	Special Concern

Fishes

<u>Common Name</u>	<u>Scientific Name</u>	<u>Status</u>
Bridle Shiner	<i>Notropis bifrenatus</i>	Special Concern



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Living Waters: Core Habitat Summaries

Bourne

Core Habitat LW339

Great Herring Pond is a 376-acre warmwater pond that supports a diverse group of freshwater mussels. The pond supports six of the state's twelve mussel species, including the rare Tidewater Mucket and Eastern Pondmussel. Mussels were found here in open areas of the clean, sandy pond bottom.

This Core Habitat also supports one of three known populations of Bridle Shiner in the South Coastal Watershed. This fish Species of Special Concern is thought to be in decline in eastern Massachusetts as it was found at only 23% of its former sites in recent surveys. The Bridle Shiner is typically found in well-vegetated, quiet waters. It feeds on small aquatic insects and other invertebrates, and is an important part of the freshwater ecosystem as prey for larger fishes. This population of Bridle Shiner in Great Herring Pond has persisted since at least 1956. This pond also contains habitat for Alewife, a fish that spends much of its life in coastal waters but returns to freshwaters to spawn (breed).



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